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PATENT REQUEST: STANDARD PATENT

We, being the persons identified below as the Applicant, request the grant of a patent to the persons identified below as the Nominated Persons, for an invention described in the accompanying standard complete specification.

Full application details follow:-

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[70] Nominated Persons: as above

[54] Invention Title: HINGED GUTTER

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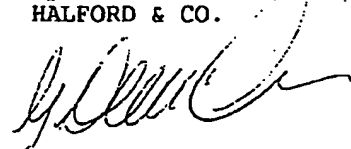
ASSOCIATED PROVISIONAL APPLICATION DETAILS

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Date: 14th February 1994

Application No.: PM4751
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DATED this 13th day of February, 1995.

JOHN SCERRI and QUENTIN ROBERT NAPIER
By their Patent Attorneys
HALFORD & CO.



G.R. Davidson

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NOTICE OF ENTITLEMENT

(To be filed before acceptance)

We, JOHN SCERRI and QUENTIN ROBERT NAPIER, of 30 Caravan Head Road, Oyster Bay, New South Wales, 2225 and 294 North Rocks Road, North Rocks, New South Wales, 2151, respectively,

being the applicants in respect of this new application, state the following:-

The persons nominated for the grant of the patent are the actual inventors.

The persons nominated for the grant of the patent are the applicants of the provisional applications listed on the patent request form.

DATED this 13th day of February 1995.

JOHN SCERRI and QUENTIN ROBERT NAPIER
By their Patent Attorneys
HALFORD & CO



G.R. Davidson

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A hinged gutter mounting arrangement has mounting brackets 16 for attachment to the roof fascia 12 and a gutter trough 10 connected to the brackets so that the gutter is first slid out from the fascia before hinging down for tipping out debris. The sliding and hinging movements may be achieved by attaching sleeve members 22 to the bottom of the trough to enclose the support legs 20 of the brackets, with stops 28,40 limiting the extent of the sliding movement.

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COMPLETE SPECIFICATION FOR A STANDARD PATENT

HINGED GUTTER

THE FOLLOWING STATEMENT IS A FULL DESCRIPTION OF THIS INVENTION, INCLUDING THE BEST METHOD OF PERFORMING IT KNOWN TO ME:-

5 The present invention relates to an improved mounting arrangement for gutters. In particular, the invention is directed to a gutter of the type which is pivotably mounted to the roof to allow easy removal of leaf litter or other debris from the gutter.

10 In Australian Patent Application No. 27073/92, a pivotable gutter mount of the above general type is disclosed, in which a generally L-shaped mounting bracket is attached to the fascia. At the fascia-remote end of the horizontal support leg of the bracket, there is a pivoting connection to the middle underside region of the gutter. This allows the gutter to be pivoted downwards for cleaning. The arrangement described in that application has the disadvantage that, due to the position of the pivot axis, the back of the gutter rises as the gutter is pivoted down. In order for the gutter to clear the overhanging roof tiles, either the back wall of the gutter must be significantly shorter than the front, requiring modification of the gutter and reducing its capacity, or the gutter must be mounted lower on the fascia than usually the case, with an increase in the amount of water which misses the gutter and less aesthetic appeal as the edge of the roof is more visible. Other gutters which hinge from the front bottom corner, such as U.S. Patent Nos. 4 309 792, 4 413 449, 4 745 657 and 5 146 718 have similar disadvantages.

Gutters which hinge down from the back bottom corner are limited to 90° tilt, which is insufficient for optimal cleaning, unless they are positioned level with the bottom of the fascia. This leads to the same
5 problems discussed above for the middle- and front-hinged gutters.

The present invention provides an alternative mounting arrangement for a pivoting gutter, and is
10 characterised by the gutter being slid away from the fascia and then pivoted.

In one form, the present invention provides a gutter mounting assembly having mounting brackets for
15 attachment to a roof fascia, a gutter trough, means connecting the trough to the brackets such the trough can be moved between an upright water collecting position and a debris removal position in which the trough faces at least partly downwards, characterised
20 in that the movement from the water collecting position to the debris removal position includes sliding the trough forward away from the fascia then pivoting to the debris removal position.

25 In one preferred form, the gutter has a sleeve which slides over a support leg of the bracket until the gutter substantially clears the support leg. The gutter may then be pivoted.

30 Further preferred embodiments of the invention will now be described with reference to the drawings, in which:

35 Figs. 1A to 1C are schematic end views showing the gutter being moved from its normal to its tipped position;

Figs. 2 and 3 are plan and side views respectively of the mounting bracket;

5 Figs. 4 and 5 are plan and side views respectively of the sleeve which is fitted to the gutter;

Fig. 6 shows the connection between the bracket and the sleeve;

10 Fig. 7 shows an end piece fitted to a section of gutter for connection to a corner piece;

15 Fig. 8 is a plan view showing the connection between the gutter section and the corner piece;

Figs. 9A and 9B are schematic side views illustrating the action of the connector; and

20 Fig. 10 shows a downpipe arrangement for use with the invention.

Referring to Figs. 1A to 1C, the gutter 10 is attached to the fascia board 12 in the usual position to catch runoff from the roof tiles 14 or other roofing material. The gutter is attached to the fascia by a generally L-shaped mounting bracket 16 which has a vertical mounting leg 18 fastened to the fascia and a horizontal support leg 20 which supports the underside 21 of the gutter. A sleeve 22 is attached to the bottom of the gutter so that the support leg is contained in a cavity between the sleeve and the bottom of the gutter. This is a relatively loose fit to allow a sliding connection. In the normal position, and when the gutter is being slid out, the bottom of the gutter sits on the support leg to retain the gutter in its upright position. This allows the

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back wall 24 to slide past the overhanging tiles.

When the gutter is slid out to the end of the support leg, the gutter is able to be pivoted (Fig. 1C) to tip out any debris which has been trapped in the gutter.

The gutter may also be kept in the tipped position as a fire safety measure or to prevent accumulation of snow and ice in cold climates. Where contact with power lines is a possibility, a fixed portion of gutter can be provided adjacent the power lines.

Figs. 2 and 3 show the mounting bracket in greater detail. The mounting leg 18 is suitably made of a fairly flat section material and has a pair of fastening holes 26 to allow fastening to the fascia. The support leg 20, which extends horizontally from the bottom of the mounting leg, is preferably formed of a thicker section, which may be hollow or solid. This gives the bracket greater strength than conventional gutter brackets which are formed of bent strap and therefore are prone to bending. Preferably, the support leg is of circular section, in order to minimise frictional contact between the support leg and the sleeve and gutter surfaces when the gutter is slid out. At the distal end of the support leg is a stop 28 which limits the sliding movement of the gutter.

As shown in Figs. 4 and 5, the sleeve member 22 is formed as a channel having fixing flanges 30 extending from the upper edges of the channel side walls 32. The fixing flanges have apertures 34 for fastening to the bottom of the gutter.

The bottom wall 36 of the sleeve member has an open ended slot 38 at its inner end and a pair of upright stops 40 adapted to fit either side of the bracket

support leg 20 and to strike the stop 28 on the support leg to prevent the gutter from sliding off the support leg. Stops 40 may conveniently be formed as a bent-up portion of the sheet material of the sleeve.

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The purpose of the slot 38 is to allow the inner end of the sleeve to rise on either side of the support leg 20 so that tilting of the gutter can be achieved.

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Fig. 6 shows the connection between the sleeve and the bracket, with the back wall 24 and bottom 21 of the gutter shown in ghost. The stops 40 loosely receive the inner end of the support leg 20 to allow sliding of the gutter. The sleeve is slightly longer than the support leg, and may include an end cap (not shown) at its outer end for neater appearance. The end cap may have spring clips for clipping onto the stop 28 so that the gutter is clipped into its normal position. Alternatively, or in addition, this clipping can be achieved by a magnet. Another means of preventing unwanted sliding of the gutter is to angle the support leg slightly upwards, so that the weight of the gutter itself holds itself in place.

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In practice, a length of gutter will be supported by a number of the brackets, at spacings dependent on the inherent stiffness of the gutter used. Conventional gutters can be used without modification to their profiles other than the attachment of the sleeves during installation. Conventional gutter stiffeners can be used to increase the span between support brackets.

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When sliding the gutter out from the fascia, the loose fit of the sleeves on the bracket support legs allows considerable tolerance of the angle at which the gutter is pulled out. For one-person operation, one

end of the gutter can be pulled out and then the other without causing jamming.

5 In an unillustrated embodiment, the stops 40 may be formed as blocks which have spring-mounted ball bearings on their inner faces to engage with dimples at the inner end of the support leg 20, thus clipping the gutter in its normal position. The spring mounting of the ball bearings allows disengagement
10 from the dimples after initial resistance and also provides the required tolerance of the gutter angle.

15 Corner sections of the gutter can be fixed, or can be mounted to be slid out from the fascia at 45°. For example, this can be done by the use of a similar bracket and sleeve arrangement as used on the straight sections of gutter, but mounted at 45° to the fascia, and thus parallel to the bisector line of the corner.

20 Figs. 7 and 8 illustrate the connection of the gutter run to a corner piece. A similar connection can also be used between two straight runs. An end piece 42, preferably formed of a rectangular or square section, is attached to the end of the gutter run, fitting
25 inside front and back walls of the gutter profile and under the bottom of the gutter. The end face of the end piece has a gasket material 44. If the end piece is formed of solid section, the end face may be milled to receive an o-ring (not shown).

30 A rod 46 extends between the front and back members of the end piece.

35 As seen from Fig. 8, the corner piece has a similar end piece 48, but with a connector 50 attached to its rod 52. This connector will be described in more detail below. The ends of the gutter run and the

corner piece are cut at a slight angle to the perpendicular, and the end pieces are attached at that slight angle so that when the connector is disengaged and the gutter is slid out, the surfaces of the mating end pieces are pulled clear of each other.

The action of the connector can be seen from Figs. 8, 9A and 9B. The connector consists of a tube 54 mounted for rotation on rod 52 of the end piece 48 tube carries a first lever arm 56 which in turn has at its far end a handle 58 which also provides pivotable connection to bent lever arms 60. The bent arm extends generally in the opposite direction to the first arm and has at its far end a hook 62 for hooking over the rod 46 of the gutter run end piece 42. As shown in Figs. 9A and 9B, the connector has a camming action, with the connection being held in place by virtue of the pivot between the two levers being overcentred. To release the connection, one simply lifts handle 58 to release the hook 62 from the rod 46 on the gutter run.

Fig. 10 shows the connection between the gutter and a downpipe 64. The downpipe is fixed to the brickwork and fascia in the usual manner with a saddle 66. The top 68 of the downpipe is cut at an angle so that the front is lower than the bottom of spout 70, to accommodate sliding of the gutter. The gutter may then be simply slid out of alignment with the downpipe before pivoting, avoiding the need for a pivoting downpipe.

While particular embodiments of this invention have been described, it will be evident to those skilled in the art that the present invention may be embodied in other specific forms without departing from the essential characteristics thereof. The present

embodiments and examples are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A gutter mounting assembly having mounting brackets for attachment to a roof fascia, a gutter trough, means connecting the trough to the brackets such the trough can be moved between an upright water
5 collecting position and a debris removal position in which the trough faces at least partly downwards, characterised in that the movement from the water collecting position to the debris removal position includes sliding the trough forward away from the
10 fascia then pivoting to the debris removal position.
2. A gutter mounting assembly according to claim 1 wherein the trough is supported in the upright position by a generally horizontal support leg of
15 each bracket.
3. A gutter mounting assembly according to claim 2 wherein the connecting means prevents pivoting of the trough when the trough is less than a predetermined
20 distance from the fascia.
4. A gutter mounting assembly according to claim 3 wherein the connecting means includes sleeve members which enclose the underside of respective support
25 legs.
5. A gutter mounting assembly according to claim 4 wherein each sleeve member cooperates with an underside of the trough to form a sleeve which
30 encloses the respective support leg.
6. A gutter mounting assembly according to claim 5 wherein the connecting means includes stop means for

limiting the extent of the sliding movement.

5. 7. A gutter mounting assembly according to claim 6 wherein a rear end of the sleeve member includes a slot aligned with and located below the support leg so that the support leg extends through the slot when the trough is pivoted.

10 8. A gutter mounting assembly according to claim 1 wherein a gutter trough has an outlet with a downwardly extending spout, said assembly further including a downpipe aligned with the spout when the gutter is in the water collecting position, a top edge of the downpipe being angled downwardly from rear to front such that the front of top edge is lower than the bottom of the spout.

15 9. A gutter mounting assembly according to claim 1 wherein the trough includes a first trough portion joined end to end with a second trough portion, said first and second trough portions having mating end faces.

20 10. A gutter mounting assembly according to claim 9 wherein each of the first and second trough portions has a rod extending across the respective trough, the assembly further comprising connectors for releasably securing the rods of the first and second trough portions to each other.

25 30 11. A gutter mounting assembly according to claim 10 wherein the connectors each comprise a pivoting attachment to said rod of the first trough portion, a hook for engaging the rod of the second trough portion and tightening cam means operatively between the pivoting attachment and the hook.

12. A gutter mounting assembly substantially as
herein described with reference to Figs. 1A to 6.

DATED this 13th day of February 1995.

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JOHN SCERRI and QUENTIN ROBERT NAPIER
By their Patent Attorneys
HALFORD & CO

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ABSTRACT

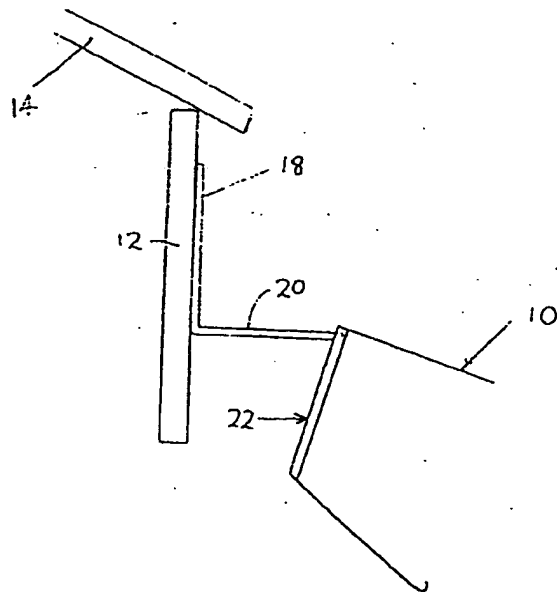
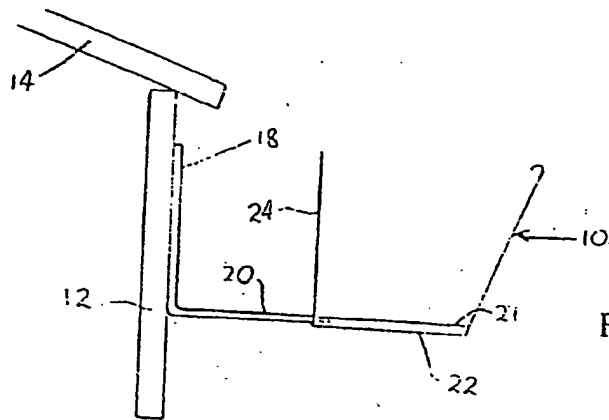
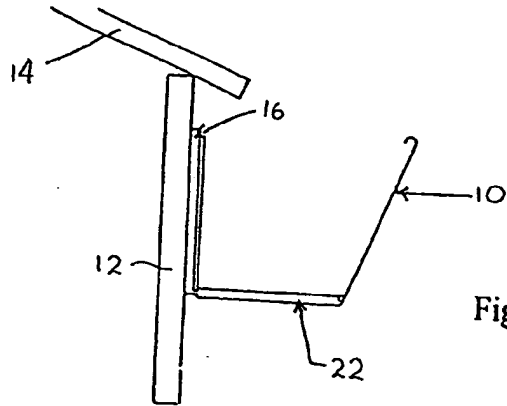
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members 22 to the bottom of the trough to enclose the
support legs 20 of the brackets, with stops 28,40
10 limiting the extent of the sliding movement.

Figure to accompanying abstract: Fig. 1C

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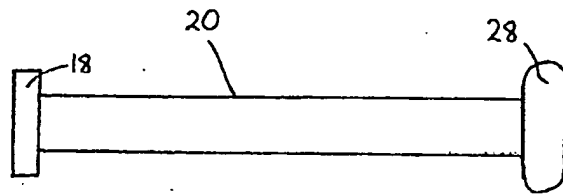


Fig. 2

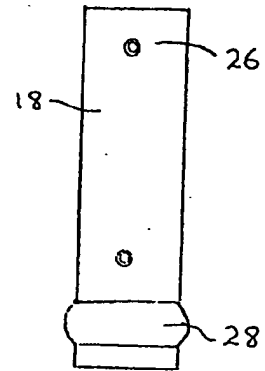


Fig. 3

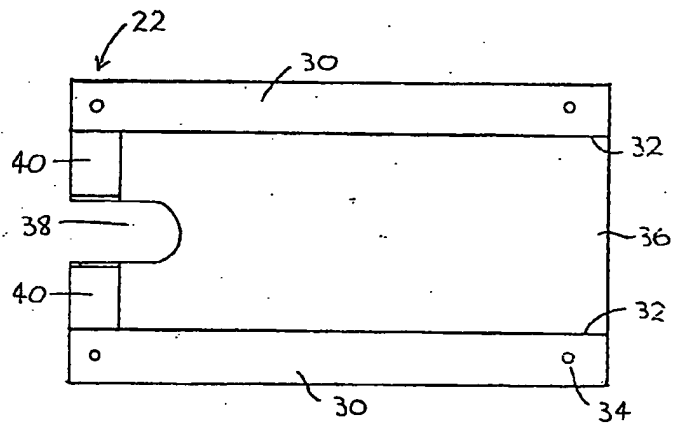


Fig. 4

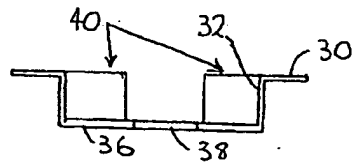


Fig. 5

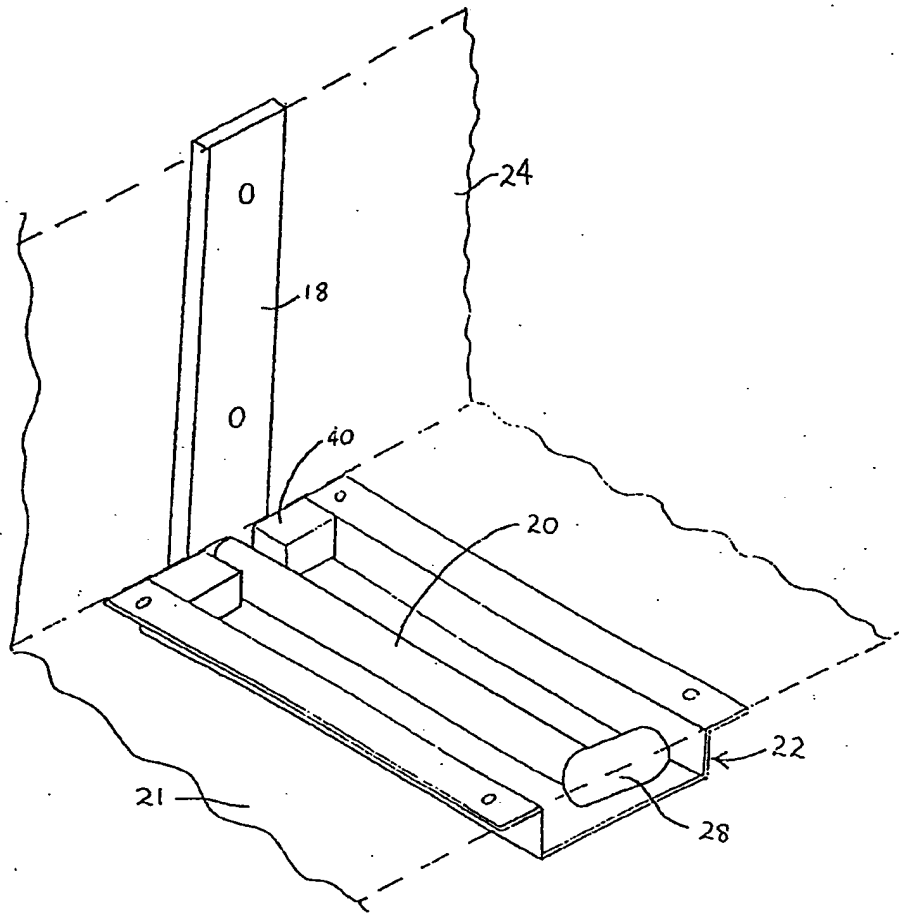


Fig. 6

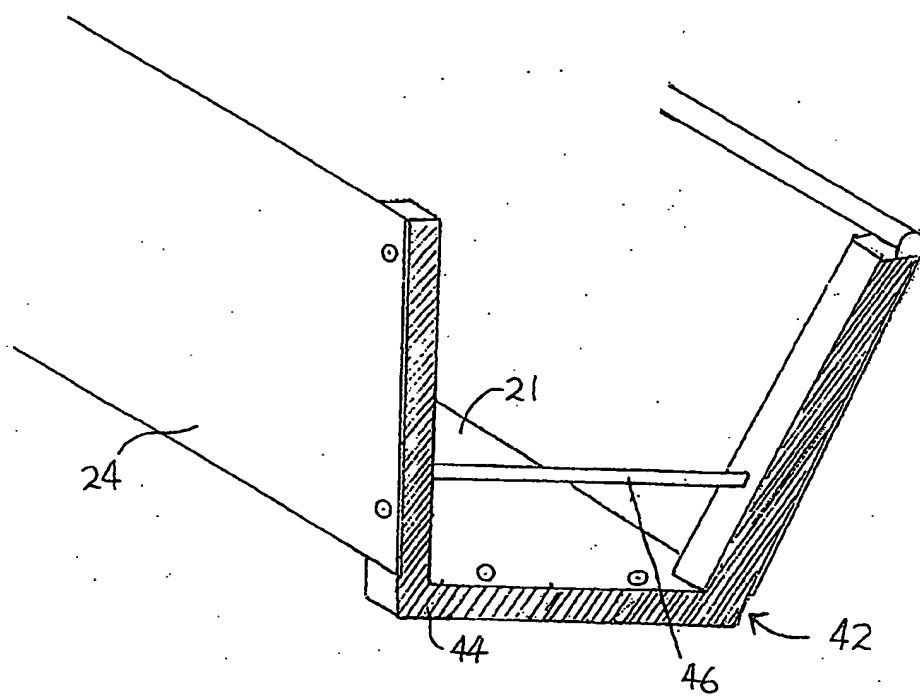


Fig. 7

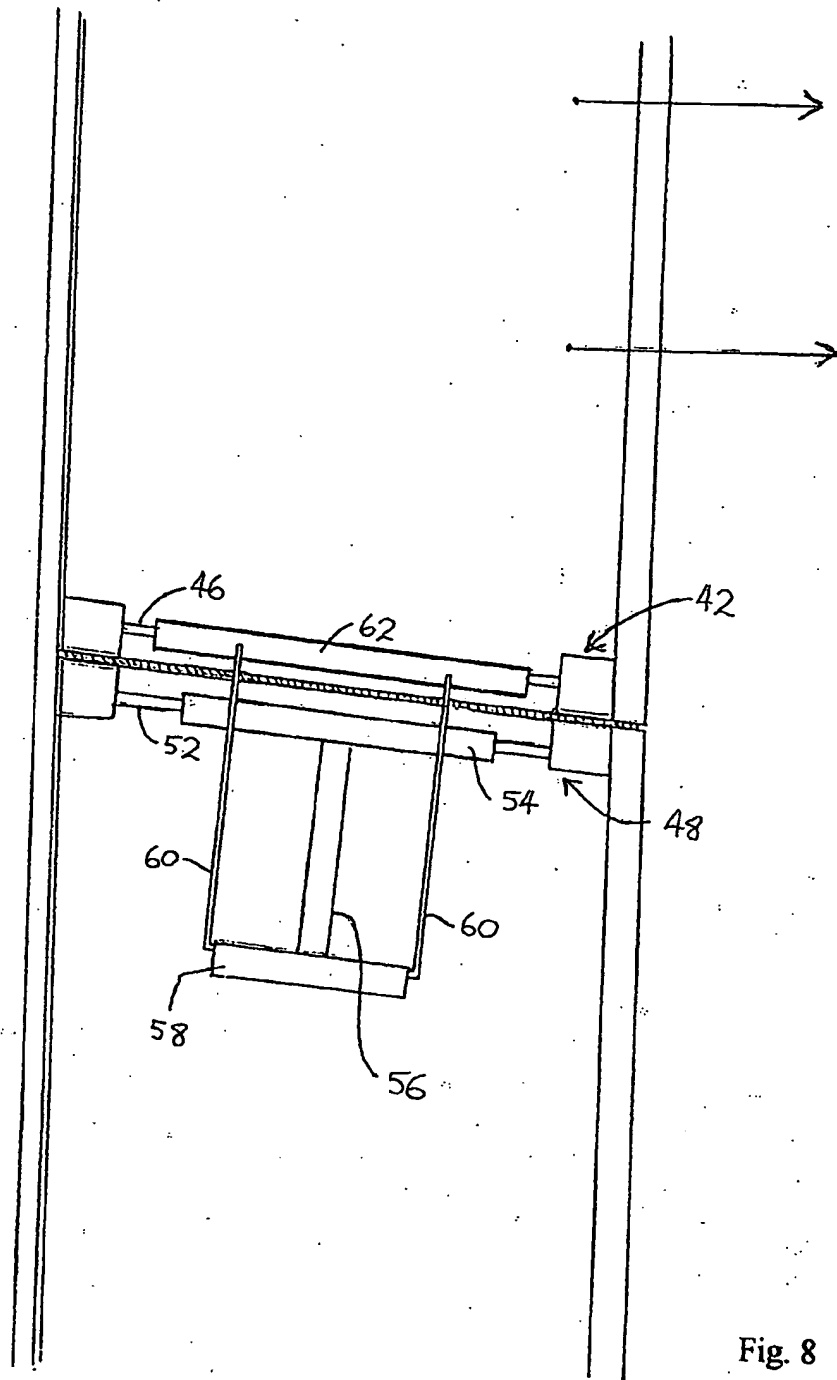


Fig. 8



Fig. 9a

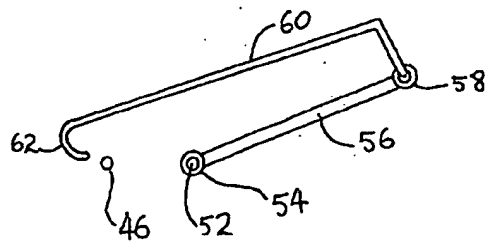


Fig. 9b

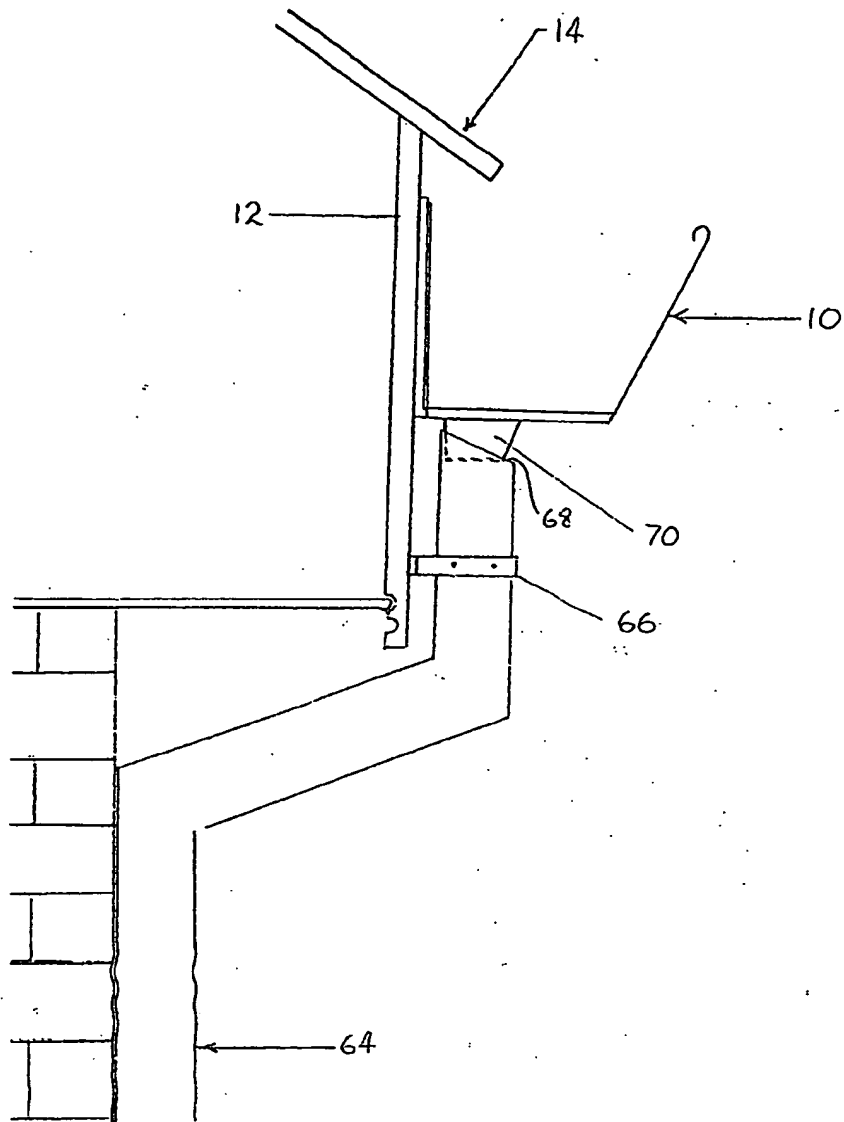


Fig. 10

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